

The Use Of Scanner Acquisition In Core Data For Very High Resolution Cyclicity Studies

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It is well known the studies and methodologies used to identify cycles within the Milankovitch band. However, in order to identify higher frequency cycles, such as the millenium band cycles (500 to 10,000 years), the ice sheets expansion and contractions (6,000 years), the decadal band cycles (10 to 400 years) and even the cycles forced by tides and annual periods, it is necessary to use methods and records that allows a much higher resolution.

This study was conducted in a Late Paleozoic succession composed of siltstones and shales rhythmically interbedded from cored intervals of the Paraná Basin, Brazil.

Due to the good color contrast between the laminae it was used a conventional scanner, which has proved to be very practical and useful. The scanned image was then transformed into a 8 bite numerical file (250 bytes) representing 256 colors in black and white and with 254 gray tones. The digital data was processed using a Fourier transform and plotted a power spectrum. The main frequency values were converted to thickness and these were set as a square matrix and compared with another square matrix of important well known cycle bands.

The results show that the analyzed rhythms represent distal facies of stormed induced deposits associated with the Late Paleozoic final glaciation at the Paraná basin. These cycles and bundles represent periodicities ranging from hundreds of yers up to thousands of years.