Milankovitch periodicity in the Paratethys Miocene depositional systems of the Vienna Basin

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The extensive hydrocarbon exploration in the Middle and Upper Miocene sediments of the Vienna Basin recorded a quite characteristic succession of marls and sands used as a marker-system for the regional the correlation of wells. During the last years, these patterns, being most obvious in geophysical data-logs, have been discussed by Harzhauser & Piller (2004) to be triggered by astronomical forcing. Based on the approximate duration of the represented stages, a strong influence by the 100-kyr eccentricity band was proposed.
We tested our hypotheses now based on the geophysical raw-data of the 2200 m long sedimentary interval of the OMV-well Niedersulz 9 in the northern Vienna Basin. Analysis of long-term trends in the studied records and their visual inspection does not permit a reliable detection of the frequencies and phase relations between proxy records and astronomical forcing. In order to verify it, Power Spectral and Evolutive Wavelet Spectral analysis and Gaussian band-pass filtering methodologies are applied in the depth domain to the electric data of well Niedersulz 9.
In detail, spectral and evolutive wavelet analysis, performed in the depth domain (confidence interval >95%), revealed a prominent peak at 102 meters, which is in good confidence with the discussed 100-kyr cycles and a peak at about 350 meters corresponding to 400-kyr cycles. In addition, a distinct peak at 1250 meters is also recorded, which could be correspond to the long-period of 1.2 My obliquity cycle. Gaussian band-pass filtering procedures were applied to extract selected long and short-eccentricity frequency from the original signals which are successively compared with the same harmonic component recognized in the astronomical curve of Laskar et al., (2004).

Harzhauser M. and Piller W. E., (2004). Integrated stratigraphy of the Sarmatian (UpperMiddle Miocene) in the western Central Paratethys. *Stratigraphy*, vol. 1(1), 65-86.

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