



Cyclostratigraphic dating in the Lower Badenian (Langhian, Middle Miocene) of the Vienna Basin (Austria)

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Cyclostratigraphic dating of a 102 m core at the type locality of the Badenian, the old brickyard Baden-Sooss in the Vienna Basin, yielded an exact age for the lower part of the Badenian Central Paratethys stage (Langhian, Middle Miocene). The sedimentary succession of the core consists mainly of bioturbated, medium-to-dark gray marly shales with carbonate contents between 10 and 35% and organic carbon contents between 0.32 and 0.78%. The depositional environment can be characterized as offshore, below fair weather wave base. The sediments are hemipelagites, a mixture from pelagic biogenic carbonate, mainly calcareous nannofossils and foraminiferal tests, and terrigenous clay and silt.

Biostratigraphic investigations on foraminifera (mainly lower part of the local Upper Lagenid Zone) and calcareous nannoplankton indicate an early Badenian (Langhian) age. The investigated core interval can be placed above the first occurrence of *Orbulina suturalis* (14.561 myr, Abdul Aziz et al. 2007). The absence of *Helicosphaera waltrans* and the presence of *Sphenolithus heteromorphus* allows an attribution of the investigated core into the upper part of nannoplankton Zone NN5 (Langhian).

Cycles in carbonate content, organic carbon content, and magnetic susceptibility have been identified by power spectra analysis (Hohenegger et al. 2008). Correlations be-

tween the three variables are extremely significant. Using cross-correlation, periods around 40 m correlate significantly with the 100.000 yr eccentricity cycle, the 20 m periods with the obliquity cycle, and the 15 to 11-m periods with both precession cycles.

Wavelet transformation and decomposition of composite periodic functions were used to obtain the position of the cycle peaks in the profile. Cross-correlation with orbital cycles (La2004) dates the Baden-Sooss core between -14.379 ± 1 and $-14.142 \text{ myr} \pm 9 \text{ kyr}$ and thus gives a cyclostratigraphic age constrain for the early Badenian.

Abdul Aziz H, Di Stefano A, Foresi LM, Hilgen FJ, Iaccarino SM, Kuiper KF, Lirer F, Salvatorini G, Turco (2007) Integrated stratigraphy and $^{40}\text{Ar}/^{39}\text{Ar}$ chronology of early Middle Miocene sediments from DSDP Leg 42A, Site 372 (Western Mediterranean). *Palaeogeogr Palaeoclimatol Palaeoecol* (in press).

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