



## **Late Cenomanian carbon isotope stratigraphy of the Levant carbonate platform (Central Jordan): Cyclic patterns and correlations**

**J. Wendler** (1), J. Kuss (1) and R. Stein (2)

(1) Bremen University, Geoscience Department, Germany (kuss@uni-bremen.de)

(2) Alfred Wegener Institut, Bremerhaven, Germany

The  $\delta^{13}\text{C}$  stable isotope events of mid-Cenomanian through lower Turonian times are clearly expressed in the neritic Southern Tethys rim intra-platform basins of the Levant carbonate platform of Central Jordan, and can be correlated with isotope curves of the Boreal Realm. This allows for good time control and, in combination with high accumulation rates of the sections investigated, enables an analysis of the cyclic patterns. In the present study we investigate TOC, carbonate content and the geochemical signature (stable isotopes, organic geochemistry and mineralogy) as well as the microfossil content.

The sections investigated are positioned within a shallow intra-platform basin which is sensitive to record processes at the land-sea interface. In general, a sequence of decreased carbonate production is observed starting at the mid Cenomanian event (MCE) and continuing to the end of the lower Turonian. An 87 m thick sequence of green-brown marls and clays with layers of nodular limestone is exposed including a short period of normal carbonate production in the lower late Cenomanian.

The mid-Cenomanian events (MCE1 and 2) are clearly expressed and MCE2 is related to an enhancement in TOC, suggesting that this event forms a precursor of the major oceanic anoxic event (OAE2) in the latest Cenomanian. The entire data set shows conspicuous cycles particularly in the carbonate record. Those can be correlated to other areas (e.g. Tarfaya, Eastbourne, Germany) and allow to date the duration of the OAE2 isotope excursion (700 kyr). Major variations in TOC concentration follow the 400 kyr long eccentricity cycle while bundling of the carbonate record reflects the 100

kyr short eccentricity cycle.

The carbonate platform experienced a prolonged phase of carbonate production crises during the investigated period of time. These appear to be related to 3<sup>rd</sup> order sea level variations and periods of enhanced terrigenous input. The 3<sup>rd</sup> order sea level changes appear to follow a long period cycle which possibly had a glacio-eustatic forcing.