

High-resolution $\delta^{13}\text{C}_{\text{org}}$ stratigraphy in an Early Cretaceous expanded section: Implications for global correlation

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The latest Barremian-Early Aptian recorded a series of environmental changes of global magnitude identified as pronounced fluctuations of the $\delta^{13}\text{C}$ isotopic record indicating alterations of the carbon cycle [1-2]. Pulses of isotopically light CO_2 associated with intensified volcanism and /or dissociation of methane hydrates at that time have been invoked as the main cause for negative excursions of the $\delta^{13}\text{C}$ profile. Conversely, enhanced ^{12}C removal due to intensified primary productivity and enhanced organic carbon preservation recorded as worldwide deposition of black shales (average TOC > 2%) might explain a subsequent positive excursion (up to ~ 4 ‰) corresponding to Oceanic Anoxic Event 1a (OAE1a) coeval with the lower part of the *L. cabri* planktonic foraminifera Zone.

Similarities in the global extent of the $\delta^{13}\text{C}_{\text{carb}}$ and $\delta^{13}\text{C}_{\text{org}}$ profiles [3] have been used as an important geochemical correlation tool for chronostratigraphy of the Barremian trough the Aptian [4].

Here we present a high-resolution (~2 samples/m) curve of $\delta^{13}\text{C}_{\text{org}}$ and TOC for an expanded (237 m) Tethyan section (El Pui section) including the uppermost Barremian to the middle Aptian of the Organyà Basin located in the south-central Spanish Pyrenees. The $\delta^{13}\text{C}_{\text{org}}$ profile has been calibrated with micro- and macrofossils [5] as well as with carbon isotope segments C1- C6 [3]. The high-resolution study of the El Pui section reveals that the pattern of the $\delta^{13}\text{C}_{\text{org}}$ curve concurs with the global isotopic trend defined by the Tethyan model [3] and provides a higher temporal resolution of the influence of global events and superimposed local factors.

The results provide an important contribution to the understanding of the changes in the global carbon reservoir and the influence of local factors in the latest Barremian - Early Aptian carbon isotopic profile used as a correlation tool.

[1] Schlanger and Jenkyns (1976) *Geol. Mijnbouw*, **55**, 179-184, [2] Jenkyns (1980) *Geol. Soc.London*, **137**, 171-188, [3] Menegatti *et al* (1998) *Paleoceanol.* **13**, 530-545. [4] Sanchez-Hernandez & Maurrasse (in press) *Chem. Geo.* Xxx. [5] Sanchez *et al* (submitted 2014) *Cretaceous Res.*