Recognition of mucilage and microbial events on the Early–Late Pliensbachian (Lusitanian Basin, Portugal)

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In the Lusitanian Basin (Portugal), the Early–Late Pliensbachian interval (c. a. 186 Ma, Early Jurassic) is characterized by the deposition of organic-rich marl–limestone hemipelagic alternations on a north-westerly dipping low-energy carbonate ramp [1]. The aim of this work is to present the characterization of these organic-rich facies at a basinal scale, supported by the combination of Sedimentology, Stratigraphy and Paleontology with Geochemistry, Organic Petrography, Palynofacies and Biochemistry.

Several well defined black shales (*s. l.*) are observed throughout the studied sections, where TOC values reach up to 26.3 wt.%. From the integration of the available data, we suggest that these black shales correspond to mucilageneous agreggates and/or microbial biofilm events, whose origin is related with palaeoceanographic and palaeoclimatic changes. Modern and fossil examples show that massive mucilage and microbial outbreaks can have severe effects on the biota [e.g. 2, 3] and that their preservation can be an important factor in influencing several elemental cycles and their major disturbances [e.g. 4].

It has been evoked that the Late Pliensbachian corresponds to a widespread organic matter preservation interval (Late Pliensbachian OMPI), linked to the complex chain of events that ultimately led to the Toarcian Oceanic Anoxic Event [5]. Our data highlights the relationship between microbial development and contemporaneous palaeoenvironmental changes and adds valuable information to understand their role in the modern world.

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[1] Duarte *et al*. (2010) *Geol Acta* **8**(3), 325–340. [2] Danovaro *et al*. (2009) *PLoS ONE* **4**(9), e7006. [3] Castel & Rodgers (2009) *Environmental Geosciences* **16**(1), 1–23. [4] Gorin *et al*. (2009) *Terra Nova* **21**, 21–27. [5] Silva *et al*. (2011) *Chem Geol* **283**, 177–184.

The interaction between Central and South America from Sr-isotope chemostratigraphy of Cenozoic coral reef sucessions

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The interaction between Central America and South America has been extensively studied due to important implications that the separation of the Caribbean and Pacific oceans may have in terms of oceanography, ecology (i.e. connectivity) and global climate. Timing the exact closure of the Panama Isthmus has remained difficult due to the lack of a well-constrained chronostratigraphic framework for the Panamanian-Colombian area. The Panama Basin is the main tectonic feature separating the Chorotega and Choco-Darien Blocks [1]. Previous investigations have suggested a connection between western Panama and North America at ca 19 Ma; implying disconnection between the Chorotega and Choco-Darien during that time [2]. However, recent geochronologic investigations along eastern and western Panama have suggested a tectonic interaction between Central America – South America at ca 23 Ma [3, 4].

The Darien Formation in the Choco-Darien Block consists of Eocene-Oligocene collisional arc-related volcanics. Exquisitely well-preserved coral reef patchy carbonate successions nonconformably overlay the Darien Formation. Sr-isotope chemostraigraphic data and calcareous nanoplankton suggests a depositional age between 23.3 and 13.65 Ma. The depositional age of such carbonate successions that cover the latest arc record in eastern Panama provides a unique temporal framework for the beginning of Panama-Northern South America tectonic interaction and the resulting Cenozoic paleoceanographic, paleoclimatic and paleobiologic changes in the neotropics.

[1] Coates *et al*. (2004) *Geol. Soc. Am. Bul*. **116**, 1327–1344. [2] Kirby *et al*. (2008) *PloS ONE* **3**(7) e2791. [3] Farris *et al*. (submitted) *Geology*. [4] Montes *et al*. (Submitted)